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Department of  
Agriculture  
  
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Experiment  
Station  
  
Bozeman,  
Montana

# MONTANA WATER SUPPLY OUTLOOK

UNITED STATES DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE  
SNOW SURVEY UNIT  
  
Federal Bldg., Rm. 443  
10 East Babcock Street  
Bozeman, MT 59715  
  
OFFICIAL BUSINESS  
PENALTY FOR PRIVATE USE, \$300

THIRD-CLASS BULK RATE  
POSTAGE AND FEES PAID  
USDA - SCS  
BOZEMAN MT  
PERMIT NO D-287

## Snowpack and Streamflow Forecasts as of February 1, 1985



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### How cold was it?

The cold spell we experienced near the end of January was by far the coldest of the winter. Few areas in the state escaped the temperatures which dropped far below minus 20 degrees Fahrenheit.

Cold air drainage in the higher mountain valleys causes cold air to "puddle" in low areas and can produce some extremely low temperatures.

Locations such as the areas around Butte and West Yellowstone have become notorious for producing record lows for the nation.

On January 20, 1954, the coldest temperature ever recorded in the Continental United States, a minus 69.7°F, was recorded on Rogers Pass near Helena.

Within the SNOTEL reporting system there are several sites that we expect to record extremely low temperatures. Several have done just that. The coldest temperatures recorded this winter and the locations where they were measured are shown below.

Site	Area	Temp	Date
Calvert Creek	North of Wisdom	-41°F	2-4-85
Nevada Creek	South of Lincoln	-45°F	1-30-85
Jasin Creek	South of Butte	-52°F	2-4-85
Whiskey Creek	South of W.Yellowstone	-58°F	1-31-85

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The Montana Water Supply Outlook is a publication of the U. S. Soil Conservation Service. The SCS administers the Cooperative Snow Survey Program in cooperation with other federal, state and private agencies, organizations, and individuals.

The report is prepared by SCS, Snow Survey and Water Supply Forecast Staff, Room 443, Federal Building, 10 East Babcock, Bozeman, Montana.



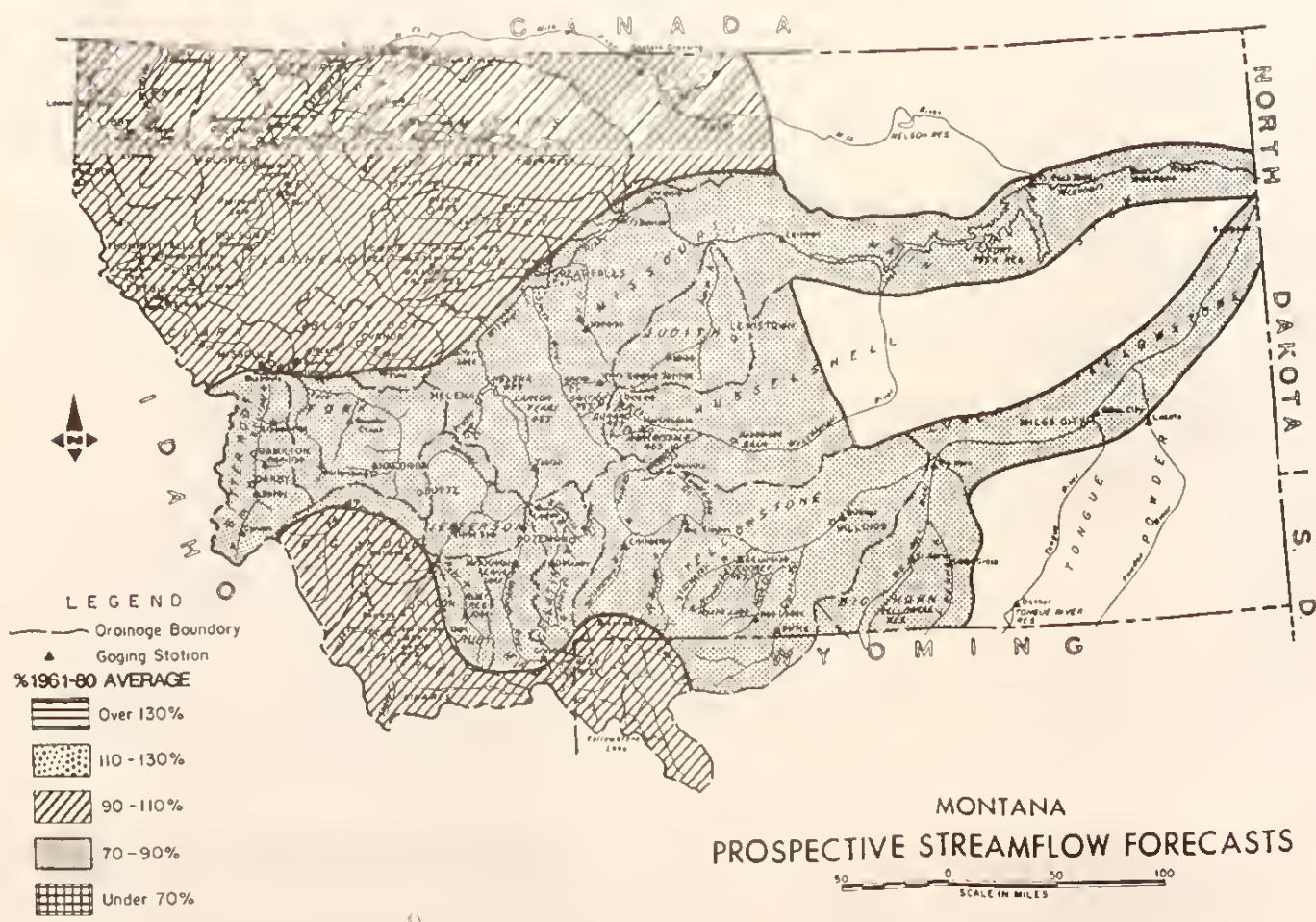
### Low snowfall in January

January produced very little snowfall across Montana. The weather patterns that brought large amounts of snowfall to most areas in the state in late December have shifted to cold and dry weather.

In a normal year, about one-fourth of the season's snow accumulation is deposited during the month of January.

As a result, the snowpack percentages have dropped significantly. Presently, the northern half of the state has average or a little above average snowpack while most of the southern half is below average.

Generally, about two-thirds of the season's snowpack has accumulated by February 1. This means the weather patterns that develop over the next 2 to 3 months become very critical in determining the seasonal snowpack levels and the subsequent spring and summer runoffs.



### Streamflow forecasts drop

As a result of deficient January snowfall, streamflow forecasts have dropped significantly since last month. Present predictions of spring and summer streamflow are in the near average range for the northern areas of the state and for some of the streams in the southwest. Much of the southern half of Montana can expect runoff 10 to 15 percent below average.



# Missouri River & Hudson Bay Drainages

## STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR				PAST RECORD			
	FORECAST		THOUSAND ACRE FEET		FORECAST		THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average	Last Year	Average	Thousand Acre Feet	Percent of Average	Last Year	Average
PERIOD	APRIL - SEPTEMBER				APRIL - JULY			
FED ROCK RIVER near Donida (1)	97.0	94	244	103	88.8	93	212	96.3
BEAVERHEAD RIVER near Grant (2)	152	96	435	158	130	95	337	137
BEAVERHEAD RIVER at Barratts (2)	196	94		209	168	93		180
RUBY RIVER near Alder	91.0	90		101	75.0	89		84.6
BIG HOLE RIVER near Helrose	688	91		760	635	91		698
WILLOW CREEK near Harrison	16.6	83		20.0	15.0	84		17.8
MADISON RIVER near Graveling (3)	440	89	575	496	345	89	440	388
MADISON RIVER near McAllister (4)	735	87	1,114	848	595	89	874	672
GALLATIN RIVER near Gateway	440	81		545	370	80		464
SUM OF EAST+WEST FORKS HYALITE CR. nr Bozeman (5)	22.9	80		28.6	19.2	78		24.7
HYALITE CREEK near Bozeman (6)	35.7	80		44.8	30.5	79		38.7
GALLATIN RIVER at Logan	484	79		611	415	79		523
MISSOURI RIVER at Toston (7)	2,290	90	3,827	2,545	2,000	91	3,179	2,196
SHEEP CREEK near White Sulphur Springs	19.4	89		21.8	16.8	88		19.0
SUN RIVER at Gibson Dam (8)	565	99	336	570	520	100	296	522
BELT CREEK near Monarch	120	90		134	112	91		123
MISSOURI RIVER at Fort Benton (9)	3,540	89		3,980	3,120	90		3,468
TWO MEDICINE CREEK near Browning (10)	250	101		248	239	102		235
BAOGER CREEK near Browning	133	102		130	115	102		113
INFLOW SHIFT RESERVOIR near Dupuyer	86.5	100		86.7	75.0	100		74.7
CUT BANK CREEK at Cut Bank	113	99		114	105	97		108
MARIAS RIVER near Shelby	555	102		542	525	101		518
MISSOURI RIVER at Virgelle (11)	4,260	93		4,570	3,700	92		4,030
MISSOURI RIVER near Landusky (11)	4,550	91		4,980	3,950	90		4,383
NORTH FORK MUSSELSHELL RIVER near Delpine	5.7	89		6.4	4.8	89		5.4
SOUTH FORK MUSSELSHELL RIVER above Martinsdale	55.8	89		62.8	53.5	91		58.9
MISSOURI RIVER below Fort Peck Dam (11)	4,500	91		4,961	3,985	90		4,428
MILK RIVER at Eastern Crossing (Mar-Sept.)	122	112		109				
MILK RIVER at Eastern Crossing (12) (Mar-Sept.)	300	108		279				
INFLOW LAKE SAKAKAWEA, ND (11)	11,480	90		12,755	10,890	89		12,239
ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE								
SASKATCHEWAN RIVER BASIN								
SWIFTCURRENT CREEK at Sherburne (13)	130	102	102	128	113	101	87.4	112
ST. MARY'S RIVER near Babb (13)	490	101		487	415	100		416

### WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply

STREAM or AREA	Flow Period	
	Spring Season	Late Season
Beaverhead	Avg	Avg
Ruby	Avg	Fair
Big Hole	Avg	Avg
Boulder	Avg	Fair
Jefferson	Avg	Fair
Madison	Avg	Avg
Gallatin	Avg	Fair
West-Side Missouri	Avg	Fair
Smith-Belt	Avg	Fair
Sun	Avg	Avg
Teton	Avg	Avg
Marias	Avg	Avg
Judith	Avg	Fair
Musselshell	Avg	Fair
Milk	Avg	Avg
Bear Paws	Avg	Avg
St. Mary's	Avg	Avg

## Missouri forecasts revised downward

All forecasts have been revised downward because of deficient January precipitation.

Current predictions of spring and summer streamflows are for 10 to 15 percent below average runoff on most tributaries in the Missouri River headwaters. Tributaries east of the Missouri River are also forecast to be below average. Most streams on the west side downstream from Canyon Ferry Reservoir should have near average streamflows.

### SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUB-WATERSHED	Number of Gauging Stations Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average
Beaverhead	14	98	90
Ruby	4	82	87
Big Hole	12	111	89
Boulder	12	136	87
Jefferson	42	106	89
Madison	15	102	88
Gallatin	15	84	73
Missouri Headwater	72	100	85
West-side Missouri (Toston-Cascade)	8	142	90
Smith-Belt-Arrow	5	116	91
Missouri Main-stem	13	128	91
Teton & Sun	3	208	99
Marias	5	166	97
Marias-Teton-Sun	8	175	98
Judith-Musselshell	7	128	91
Milk	10	182	116
Bear Paws	6	138	133
Missouri (Total)	110	115	89
Saskatchewan			
St. Mary's	5	186	106
Bow River in Alberta	6	110	90



## January snowfall below average

There was a major turnaround in snowfall during January. Mountain precipitation was very light across the entire drainage with monthly increases of about 1/2 to 1 inch. Normally, 3 to 7 inches of moisture can be expected.

The present snowpack is now below average in most of the headwater areas except for a small part of the Madison River headwaters in Yellowstone National Park. Most of the Missouri main-stem streams are near average.

A month ago, this area was well above average due to large December storms. The jet stream that helped bring in this moisture and mild temperatures in December was flowing west to east across Montana. More recently, it has been traveling from northwest to southeast and bringing cold temperatures with very little moisture.

With these drastic changes in our weather patterns, it becomes very difficult to project how much snowpack will be accumulated this season. As time goes on, hopefully, the patterns will become a little more stable.



# SNOW SURVEY DATA

FEBRUARY 1985

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-80
MONTANA						
ARCH FALLS	7350	1/28/85	27	6.5	7.2	8.6
ASHLEY DIVIOE	4820	2/01/85	26	5.9	3.4	5.6
ASHLEY LAKE	4000	2/01/85	22	4.0	2.2	5.0
BADGER PASS	6900	1/26/85	90	27.0	18.0	28.0
BADGER PASS BUTYL	6900	2/01/85	---	19.5	14.0	25.9
BANFIELD MOUNTAIN	5600	1/30/85	43	14.4	6.8	17.3
BANFIELD MTN BUTYL	5600	2/01/85	---	13.2	7.2	13.1
BARKER LAKES BUTYL	8250	2/01/85	---	9.7	7.0	10.7
BASIN CREEK	7180	1/29/85	27	6.3	2.9	5.4
BASIN CREEK METAL	7180	2/01/85	---	5.0	2.4	4.6
BEAGLE SPGS METAL	8850	2/01/85	---	5.6	5.5	5.0
BEAR PAW SKI AREA	5200	1/29/85	28	8.2	5.0	5.3
BIG SKY	7700	2/05/85	42	10.2	9.4	10.2
BLACK BEAR BUTYL	7950	2/01/85	---	23.0	22.2	24.1
BLACK PINE	7100	1/30/85	27	6.4	5.1	9.7
BLACK PINE BUTYL	7100	2/01/85	---	6.5	5.9	10.0
BLOODY DICK BUTYL	7550	2/01/85	---	7.7	4.7	8.3
BLUE LAKE	5900	1/26/85	59	17.0	11.0	17.9
BOULDER MTN BUTYL	7950	2/01/85	---	12.4	13.1	13.7
BOX CANYON METAL	6700	2/01/85	---	6.2	4.9	7.6
BRIOGER BOWL	7250	1/29/85	55	12.0	16.0	19.0
BRIOGER BOWL BUTYL	7250	1/29/85	---	10.8	13.7	17.2
CALVERT CREEK BUTYL	6430	2/01/85	---	5.6	4.1	6.7
CARFOT BASIN BUTYL	9000	2/01/85	---	13.9	18.3	19.5
CARTER CREEK	7400	2/01/85	16	3.1	4.2	3.4
CASHE CREEK METAL	7800	2/01/85	---	6.1	5.8	4.4
CHESSMAN RESERVOIR	6200	1/28/85	13	2.8	1.0	2.9
CHICKEN CREEK	4060	1/29/85	35	11.1	8.5	11.4
CLOVER MEADOW METAL	8800	2/01/85	---	10.0	12.8	10.4
COLE CREEK	7850	1/31/85	34	6.9	9.6	12.2
COLE CREEK BUTYL	7850	2/01/85	---	6.6	9.5	10.3
COMBINATION	5600	1/30/85	14	2.4	2.7	4.4
COMBINATION BUTYL	5600	2/01/85	---	3.1	2.7	3.9
COPPER BOTTOM BUTYL	5200	2/01/85	---	9.0	6.3	8.7
COPPER MOUNTAIN	7700	1/28/85	30	6.0	5.8	7.8
COYOTE HILL	4200	1/29/85	30	8.2	6.1	8.1
CRYSTAL LAKE METAL	6050	2/01/85	---	10.5	6.8	8.8
DAISY PEAK	7600	1/29/85	28	6.5	4.6	8.0
DALY CREEK METAL	5780	2/01/85	---	6.6	4.5	9.1
DARKHORSE LK. METAL	8700	2/01/85	---	12.2	15.7	14.6
DEADMAN CREEK BUTYL	6450	2/01/85	---	7.2	5.4	8.1
DESERT MOUNTAIN	5600	1/30/85	37	11.4	6.3	11.0
DEVILS SLIOE	8100	1/28/85	39	11.3	14.8	15.2
DISCOVERY BASIN	7050	1/29/85	29	6.2	5.1	7.2
DIVIDE BUTYL	7800	2/01/85	---	5.1	7.1	6.8
DIX HILL	6400	2/02/85	29	7.2	5.6	8.5
DUPUYER CREEK BUTYL	5750	2/01/85	---	7.5	3.6	--
EMERY CREEK	4350	1/30/85	42	12.6	8.0	10.7
EMERY CREEK BUTYL	4350	2/01/85	---	12.7	7.6	10.6

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-80
FISH CREEK	8000	1/29/85	27	6.8	4.2	6.4
FISHER CREEK BUTYL	9100	2/01/85	---	19.2	19.2	25.6
FLATTOP MTN BUTYL	6300	2/01/85	---	32.2	20.7	33.0
FOURTH OF JULY	3450	2/05/85	31	8.7	3.3	6.9
FRIODAY HILL	4620	2/05/85	52	17.2	7.4	17.8
FROHNER MEADOWS	6480	1/28/85	20	4.6	3.6	5.9
FROHNER MOWS BUTYL	6480	2/01/85	---	4.5	4.2	5.3
GARVER CREEK	4250	1/30/85	30	7.8	4.8	8.9
GARVER CREEK BUTYL	4250	2/01/85	---	7.5	3.8	7.5
GIBBONS PASS	7100	1/30/85	47	14.2	13.4	16.2
GRAVE CREEK	4300	1/30/85	42	12.8	6.8	12.2
GRAVE CRK BUTYL	4300	2/01/85	---	13.4	7.3	12.2
HAND CREEK	5030	1/30/85	38	9.5	5.0	9.0
HAND CREEK BUTYL	5030	2/01/85	---	9.0	4.4	10.7
HAWKINS LAKE	6450	1/30/85	56	22.0	12.1	22.6
HAWKINS LAKE BUTYL	6450	2/01/85	---	17.6	10.6	21.2
HEART LAKE TRAIL	4800	2/01/85	59	19.4	10.6	15.7
HERGEN OAM	6550	1/31/85	28	5.9	8.6	8.8
HELL ROARING DIVIOE	5770	1/31/85	58	19.9	15.7	22.4
HEPRIG JUNCTION	4850	1/29/85	52	18.2	11.2	17.7
HOLBROOK	4530	1/26/85	30	7.5	3.5	7.5
HOOD MEADOW	6600	1/28/85	24	5.4	6.6	7.8
HOODOO BASIN	6050	2/01/85	102	42.0	26.2	34.8
HOODOO BASIN BUTYL	6050	2/01/85	---	32.1	21.5	28.3
HOODOO CREEK	5900	2/01/85	97	37.3	24.6	32.4
INTERGAARD	6450	1/29/85	21	4.5	2.8	5.9
JOHNSON PARK	6450	1/29/85	17	3.4	2.8	5.5
KINGS HILL	7500	1/31/85	36	9.7	7.6	9.9
KIWANIS CAMP	3720	1/29/85	7	1.2	1.6	1.9
KRAFT CREEK METAL	4750	2/01/85	---	9.4	7.3	9.7
LAKEVIEW CANYON	6930	1/28/85	26	6.4	6.2	8.5
LAKEVIEW RIDGE	7400	1/28/85	24	6.2	5.5	7.6
LAKEVIEW ROG. METAL	7400	2/01/85	---	8.8	7.4	7.7
LEMMI RIDGE BUTYL	8100	2/01/85	---	6.4	4.5	6.9
LICK CREEK	6860	1/28/85	25	5.1	5.8	7.0
LICK CREEK BUTYL	6860	2/01/85	---	6.6	4.9	5.7
LOME MOUNTAIN	8880	2/05/85	48	14.0	15.2	15.7
LOWER TWIN METAL	7900	2/01/85	---	11.6	12.3	13.4
LUBRECHT FLUME	4680	1/28/85	15	2.8	2.0	5.0
LUBRECHT FLUME BUTYL	4680	2/01/85	---	3.8	2.7	3.7
LUBRECHT FOREST NO 3	5050	1/29/85	17	3.6	3.0	5.7
LUBRECHT FOREST NO 4	4650	1/29/85	7	1.6	1.1	3.1
LUBRECHT FOREST NO 6	4040	1/29/85	8	1.6	.9	3.6
LUBRECHT HYDROPLOT	4200	1/28/85	14	2.8	3.0	5.6
MANY GLACIER	4900	1/31/85	48	14.6	7.5	14.5
MANY GLACIER BUTYL	4900	2/01/85	---	14.0	7.0	13.5
MARIAS PASS	5250	2/02/85	44	15.5	5.9	11.8
MAYNARD CREEK	6210	1/29/85	35	6.8	8.3	11.4
MAYNARD CREEK BUTYL	6210	1/29/85	---	5.0	5.3	9.0
MONUMENT PEAK METAL	8850	2/01/85	---	10.7	10.9	15.7
MOULTON RESERVOIR	6850	1/30/85	21	6.8	3.7	5.2
MT LOCKHART BUTYL	6400	2/01/85	---	13.4	8.6	15.2
MULE CREEK METAL	8300	2/01/85	---	8.9	8.5	8.0
NEVADA CREEK METAL	6480	2/01/85	---	9.7	4.7	7.2
NEW WORLD	6900	1/29/85	40	8.5	9.2	10.5
NEWTON MOUNTAIN	5600	2/05/85	72	28.4	15.2	24.7
NEZ PERCE CMP BUTYL	5650	2/01/85	---	9.2	8.6	10.1
NEZ PERCE CREEK	6600	1/28/85	18	3.4	3.6	5.2

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-80
NOISY BASIN	6040	1/30/85	95	32.0	28.3	28.7
NOISY BASIN BUTYL	6040	2/01/85	---	28.0	25.1	24.2
NORTH FORK ELK CREEK	6250	1/28/85	30	7.6	4.8	9.0
N.FORK ELK CRK BUTYL	6250	2/01/85	---	7.6	5.2	7.9
NORTH FORK JOCKO	6330	2/05/85	75	25.5	24.4	29.1
NORTHEAST ENTRANCE	7350	2/01/85	22	4.4	4.4	7.2
N.E. ENTRANCE BUTYL	7350	2/01/85	---	5.2	4.6	6.8
OPHIR PARK	7150	2/02/85	36	10.2	9.2	12.0
PETERSON MEADOWS	7200	2/06/85	30	6.8	4.6	7.0
PETERSON MOW BUTYL	7200	2/06/85	---	6.6	4.7	6.7
PICKFOOT CRK METAL	6650	2/01/85	---	7.4	5.3	7.7
RIKE CREEK BUTYL	5930	2/01/85	---	20.4	10.9	18.5
PIPESTONE PASS	7200	1/28/85	16	3.3	1.8	3.8
PLACER BASIN METAL	8830	2/01/85	---	10.5	9.9	11.5
POORMAN CREEK	5100	1/30/85	78	28.9	15.3	23.9
POORMAN CRK BUTYL	5100	2/01/85	---	27.3	12.8	22.0
PORCUPINE BUTYL	6500	2/01/85	---	4.3	4.1	4.8
RED TOP	5260	2/05/85	60	23.9	11.4	20.2
ROCKER PEAK BUTYL	8000	2/01/85	---	8.5	5.4	10.5
ROCKY BOY	4700	1/29/85	21	4.4	2.8	3.6
ROCKY BOY BUTYL	4700	1/29/85	---	4.4	3.8	3.4
SADDLE MOUNTAIN	7940	1/30/85	49	15.0	14.4	17.9
SADOLE MTN BUTYL	7900	2/01/85	---	14.9	14.5	17.7
SHOWER FALLS	8100	1/28/85	37	11.1	15.2	16.3
SHOWER FALLS BUTYL	8100	2/01/85	---	11.5	15.1	15.3
SILVER RUN BUTYL	6630	2/01/85	---	2.3	3.6	3.0
SKALKAGO SUMMIT BUTYL	7260	2/01/85	---	13.7	10.3	18.5
SKYLARK TRAIL METAL	6200	2/01/85	---	19.9	17.2	19.8
S.F.K. SHIELDS BUTYL	8100	2/01/85	---	8.5	--	10.1
SPOTTED BEAR MTN.	7000	2/04/85	37	12.5	7.2	11.2
SPUR PARK BUTYL	8100	2/01/85	---	13.6	11.9	15.7
STAHL PEAK	6030	1/30/85	73	28.0	19.4	27.1
STAHL PEAK BUTYL	6030	2/01/85	---	23.7	17.6	22.7
STORM LAKE	7780	2/06/85	37	9.2	7.0	9.4
STRYKER BASIN	6180	1/29/85	60	21.4	15.1	23.4
STUART HILL	6500	1/29/85	19	4.1	2.0	4.7
STUART MOUNTAIN	7400	2/05/85	65	21.8	19.5	22.4
SUCKER CREEK	3960	1/29/85	4	.6	.0	.7
TAYLOR ROAD	4080	1/29/85	22	5.0	4.0	3.0
TEN MILE LOWER	6600	1/29/85	22	4.3	3.8	5.5
TEN MILE MIDDLE	6800	1/29/85	31	7.1	5.6	8.1
TEN MILE UPPER	8000	1/29/85	33	8.4	6.8	9.9
TEPEE CREEK BUTYL	8000	2/01/85	---	7.1	9.0	8.4
TRINKUS LAKE	6100	2/04/85	83	30.2	25.1	27.5
TRUMAN CREEK	4060	2/01/85	19	4.0	2.6	3.0
TV MOUNTAIN	6800	2/05/85	43	12.6	10.8	13.4
TWELVENILE BUTYL	5600	2/01/85	---	11.8	8.9	14.0
TWENTY-ONE MILE	7150	1/29/85	37	10.0	9.2	13.0
TWIN CREEKS	3580	1/26/85	39	10.0	5.0	9.0
TWIN LAKES BUTYL	6450	2/01/85	---	23.6	20.8	29.0
UPPER HOLLAND LAKE	6200	2/05/85	66	23.8	19.6	24.4
WALDRON BUTYL	5600	2/01/85	---	7.6	3.8	7.9
WARM SPRINGS BUTYL	7800	2/01/85	---	10.9	10.8	15.6
WEASEL DIVIOE	5450	1/30/85	68	25.6	13.4	23.5
WEST ROSEBUD	7500	1/25/85	19	3.4	5.3	7.5
WEST YELLOWSTONE	6700	1/29/85	33	8.3	7.2	8.6
WEST YELL'ST BUTYL	6700	1/29/85	---	6.5	5.4	7.0
WHISKEY CREEK BUTYL	6800	2/01/85	---	10.2	8.5	11.2
WHITE MILL BUTYL	8700	2/01/85	---	13.5	12.8	16.6

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-80
WILLOW CREEK	6500	1/31/85	24	4.2	5.5	5.9
WOOD CREEK METAL	5960	2/01/85	---	10.0	2.5	8.3
UTAH						
ABOVE BURKE	4100	1/30/85	60	18.4	9.0	14.8
BIG SPRINGS	6400	2/01/85	42	11.6	11.1	14.5
BLACK MOOSE	8160	2/01/85	---	25.1E	--	28.1
BLUE LEDGE MINE	6900	2/01/85	---	8.0E	--	12.7
CAMP CREEK	6580	1/29/85	26	6.0	4.8	7.5
HUMBOLOT GULCH	4250	1/30/85	49	14.0	6.6	--
ISLAND PARK	6290	2/01/85	39	10.5	9.7	11.7
KILGORE	6320	1/29/85	27	5.4	8.5	8.2
LOLO PASS	5240	2/01/85	62	20.8	14.1	21.5
LOOKOUT	5140	1/30/85	82	28.0	15.0	24.6
MOOSE CREEK	6200	1/31/85	36	10.2	11.2	12.2
MOSQUITO RIDGE	5200	1/31/85	82	28.8	18.2	25.8
SAVAGE PASS	6170	1/31/85	61	19.6	13.8	18.9
SAHTELL MOUNTAIN	8720	2/01/85	61	21.2	22.0	23.0
SUNSET	5540	2/01/85	64	21.7	13.2	23.0
TARGHEE PASS	6980	2/01/85	---	9.0E	7.8	10.5
VALLEY VIEW	6680	2/01/85	38	10.0	8.6	11.7
WHITE ELEPHANT	7710	2/01/85	48	15.6	14.4	16.0



# Columbia River Drainage

## STREAMFLOW FORECASTS

BASIN, STREAM and or FORECAST POINT	THIS YEAR		PAST RECORD		THIS YEAR		PAST RECORD		THIS YEAR		PAST RECORD	
	FORECAST		THOUSAND ACRE FEET		FORECAST		THOUSAND ACRE FEET		FORECAST		THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average	Last Year	Average	Thousand Acre Feet	Percent of Average	Last Year	Average	Thousand Acre Feet	Percent of Average	Last Year	Average
PERIOD	APRIL - SEPTEMBER				APRIL - JULY				APRIL - JUNE			
KOOTENAI RIVER below Libby Dam (1)	6,640	94	5,466	7,041	5,680	94	4,520	6,020				
FISHER RIVER near Libby	285	108		264	270	109		248				
YAK RIVER near Troy	485	93		523	460	92		500				
KOOTENAI RIVER at Leona (1)	7,960	93	6,534	8,602	6,940	93	5,596	7,498	5,500	91	4,282	6,051
INFLOW MOUNTAIN RESERVOIR nr Butte (Million Gallons)					230	87	182	263	210	89	179	237
HARM SPRINGS CREEK AT MEYERS DAM near Anaconda (2)	43.4	93		46.8	35.0	93		37.8				
FLINT CREEK near Southern Cross (3)	16.4	90	26.3	18.3	13.8	90	21.3	15.4				
FLINT CREEK below Boulder Creek (4)	67.5	89		75.8	53.5	90		59.5				
INFLOW LOWER WILLOW CREEK RESERVOIR near Hall (5)	14.0	89	11.6	15.7	13.2	88	10.2	14.9				
MIDDLE FORK ROCK CREEK near Philipsburg	70.9	91		78.2	64.0	91		70.5				
NEVADA CREEK near Finn	19.8	86		23.0	18.4	86		21.3				
BLACKFOOT RIVER near Bonner	930	93		999	830	92		904	718	92		782
CLARK FORK RIVER above Milltown (6)	740	91		816	640	90		708	545	91		597
CLARK FORK RIVER above Missoula	1,670	92	1,565	1,815	1,470	91	1,360	1,612	1,263	92	880	1,379
WEST FORK BITTERROOT RIVER near Conner (7)	158	89		178	150	91		164				
BITTERROOT RIVER near Darby	512	88		580	475	89		532	419	90		464
SKALKAH CREEK near Hamilton	68.8	87		56.0	42.5	87		48.7				
BURNT FORK CREEK near Stevensville (8)	32.5	87		37.4	28.4	88		32.2				
BITTERROOT RIVER at Missoula (9)	1,295	86		1,504	1,200	87		1,384	1,040	87		1,191
CLARK FORK RIVER below Missoula	2,970	90		3,319	2,670	90		2,996	2,303	90		2,570
CLARK FORK RIVER at St. Regis	4,010	91	3,732	4,411	3,620	91	3,322	3,928	3,120	91	2,825	3,428
NORTH FORK FLATHEAD RIVER near Columbia Falls	1,925	101		1,913	1,750	101		1,732	1,490	101		1,471
MIDDLE FORK FLATHEAD RIVER near West Glacier	1,850	99	1,316	1,869	1,710	100	1,236	1,713	1,425	98	1,086	1,453
SOUTH FORK FLATHEAD RIVER near Columbia Falls (10)	2,280	100	1,515	2,278	2,150	100	1,694	2,142	1,870	99	1,416	1,886
FLATHEAD RIVER at Columbia Falls (10)	6,165	99	4,738	6,208	5,770	101	4,294	5,721	5,015	102	3,589	4,921
SWAN RIVER near Big Fork	710	103		689	625	103		604				
FLATHEAD RIVER near Polson (11)	7,370	101	5,586	7,278	6,865	102	5,102	6,712	5,834	101	4,284	5,759
CLARK FORK RIVER near Plains (11)	11,700	96	9,695	12,153	10,700	97	8,914	11,071	9,175	97	7,457	9,459
THOMPSON RIVER near Thompson Falls	275	105		261	250	107		233				
PROSPECT CREEK at Thompson Falls	155	109		142	145	110		132				
CLARK FORK RIVER at Whitehorse Rapids (12)	12,900	95		13,575	11,700	95		12,351	10,040	95		10,570

- (1) Adjusted for storage in Lake Kootenai  
(2) Adjusted for storage in Silver Lake, diversions to and pumping from Georgetown Lake  
(3) Adjusted for storage in Georgetown Lake, diversions from and pumping to Silver Lake.  
(4) Sum Flint Creek at Maxville and Boulder Creek at Maxville.  
(5) Sum of North Fork Lower Willow Creek near Hall and South Fork Lower Willow Creek near Hall.  
(6) Difference in observed flow Clark Fork above Missoula and Blackfoot near Bonner.

- (7) Adjusted for storage in Painted Rocks Reservoir.  
(8) Adjusted for diversion into Sunset Hagline Canal.  
(9) Difference in observed flow Clark Fork above and below Missoula.  
(10) Adjusted for storage in Hungry Horse Reservoir.  
(11) Adjusted for storage in Hungry Horse Reservoir and Flathead Lake.  
(12) Adjusted for storage in Hungry Horse Reservoir, Flathead Lake and Noxon Rapids Reservoir

ALL FORECASTS PREPARED IN COOPERATION WITH THE NATIONAL WEATHER SERVICE

### WATER SUPPLY OUTLOOK

Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply

STREAM or AREA	Flow Period	
	Spring Season	1. Late Season
Tobacco .....	Avg	Avg
Little Bitterroot....	Avg	Avg
Mission Valley .....	Avg	Avg
Flint Creek .....	Avg	Fair
Upper Clark Fork ...	Avg	Fair
Nevada Creek .....	Avg	Fair
Blackfoot .....	Avg	Avg
West-side Bitterroot	Avg	Fair
East-side Bitterroot	Avg	Fair
Bitterroot River ....	Avg	Fair
Lower Clark Fork ....	Avg	Avg

## Columbia streamflow forecasts lowered

Streamflow forecasts have been lowered significantly due to lack of mountain precipitation in January.

Presently, predictions for spring and summer runoff are for near average flows on most streams and rivers in the northern part of the area and a little below average flows from southern drainages.

### SUMMARY of SNOW MEASUREMENTS

(COMPARISON WITH PREVIOUS YEARS)

RIVER BASIN and/or SUBWATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average
East Kootenay/BC.	18	122	85
Kootenai/Montana	18	183	105
Kootenai above Bonners Ferry...	36	151	96
Little Bitterroot	3	182	98
N. Fk. Flathead..	10	152	100
M. Fk. Flathead..	9	164	101
S. Fk. Flathead..	9	135	112
Swan .....	6	117	108
Flathead .....	37	143	104
Stillwater & Whitefish.....	5	145	93
Clark Fork above Blackfoot .....	27	135	84
Blackfoot .....	13	139	86
Upper Clark Fork above Missoula ..	40	136	85
Bitterroot .....	10	120	87
Lower Clark Fork below Missoula ..	11	169	114
Clark Fork (Total w/o Flathead)...	61	144	96
Pend O'Reille (Clark Fork & Flathead) .....	98	144	100
Columbia (Pend O'Reille & Kootenai) .....	134	146	99

## Snowpack percentages drop in Columbia

Snowfall in January was very low. Heavy snowpack areas that normally receive 6 to 8 inches of moisture generally picked up less than 2 inches. Snow surveyors reported that January 1 snowshoe tracks and snow sampling holes in the snow are still visible at some snow courses.

This very low precipitation for January has significantly dropped the snowpack percentages.

Areas that were well above average last month are now near average. Areas that were average are now below average.

At the present time, only a small area along the Montana-Idaho line from Lolo Pass to west of Libby has above average snowpack. Almost all of the Kootenai and Flathead River drainages and the northern part of the Blackfoot River have near average snow cover. Below average snowpack covers the Bitterroot, Upper Clark Fork and south half of the Blackfoot River drainages.





# Yellowstone River Drainage

## STREAMFLOW FORECASTS

BASIN, STREAM and/or FORECAST POINT	THIS YEAR		PAST RECORD		THIS YEAR		PAST RECORD	
	FORECAST		THOUSAND ACRE FEET		FORECAST		THOUSAND ACRE FEET	
	Thousand Acre Feet	Percent of Average	Last Year	Average	Thousand Acre Feet	Percent of Average	Last Year	Average
PERIOD	APRIL - SEPTEMBER				APRIL - JULY			
YELLOWSTONE RIVER at Corwin Springs . . . . .	1,860	92	1,997	2,027	1,530	91	1,622	1,686
YELLOWSTONE RIVER near Livingston . . . . .	2,168	91		2,379	1,800	91		1,969
BOULDER RIVER at Big Timber . . . . .	328	82		398	295	81		366
STILLWATER near Absarokee (1) . . . . .	568	90		632	475	90		528
CLARK'S FORK RIVER near Belfry . . . . .	520	83		628	468	83		563
ROCK CREEK near Red Lodge . . . . .	96.7	84		115	73.2	83		88.1
INFLOW COONEY RESERVOIR near Boyd (2) . . . . .	46.2	76		60.5	37.0	75		49.5
YELLOWSTONE RIVER at Billings . . . . .	4,150	93	4,262	4,516	3,610	94	3,594	3,833
BIGHORN RIVER near St. Xavier (3) . . . . .	1,712	87	1,974	1,976	1,575	88	1,688	1,794
LITTLE BIGHORN RIVER near Hardin . . . . .	161	88		182	143	88		162
TONGUE RIVER near Decker . . . . .	225	84		269	204	84		244
YELLOWSTONE RIVER at Miles City (4) . . . . .	6,150	90		6,787	5,375	91		5,906
POWDER RIVER at Moorhead . . . . .	223	85		263	209	86		243
YELLOWSTONE RIVER near Sidney (5) . . . . .	6,673	89		7,518	5,825	89		6,514

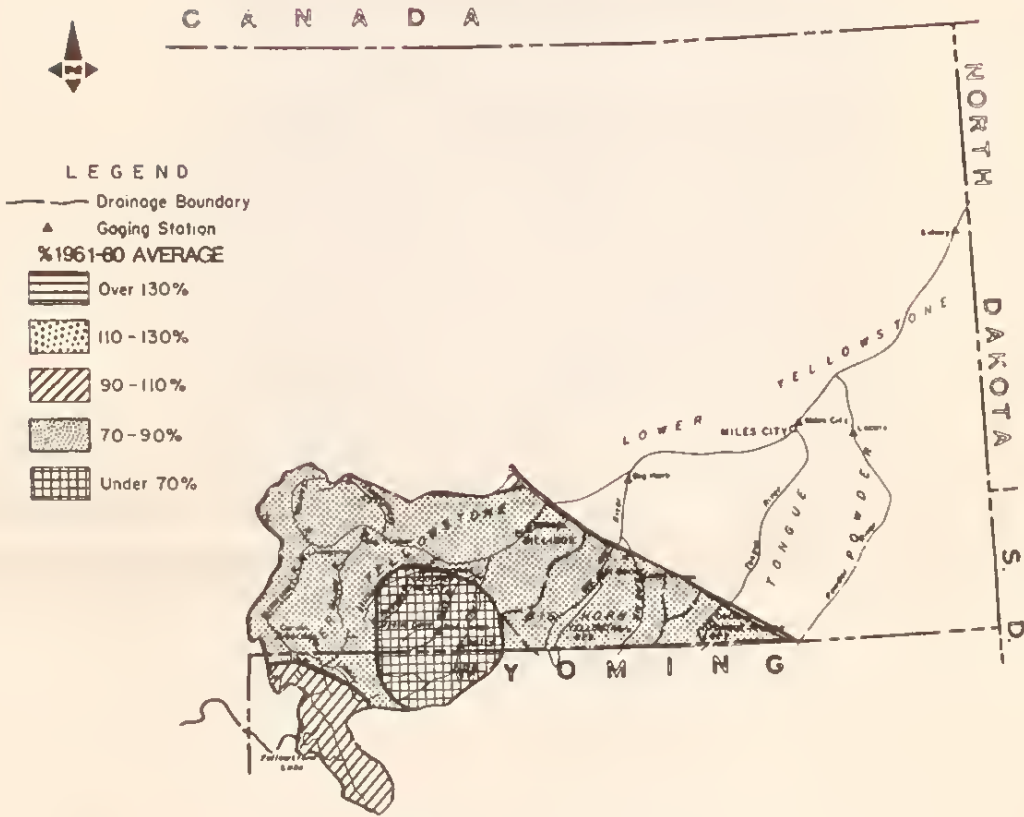
- (1) Adjusted for storage in Mystic Lake.  
(2) Adjusted for storage in Cooney Reservoir.  
(3) Adjusted for storage in Buffalo Bill, Boysen, Bull Lake, Pilot Butte and Bighorn Reservoirs.  
(4) Adjusted for storage in Bull Lake, Buffalo Bill, Boysen, Pilot Butte, Bighorn and Tongue River Reservoirs.  
(5) Adjusted for reservoirs shown in (4) and diversions into the Lower Yellowstone Canal.

ALL FORECASTS PREPARED IN COOPERATION  
WITH THE NATIONAL WEATHER SERVICE

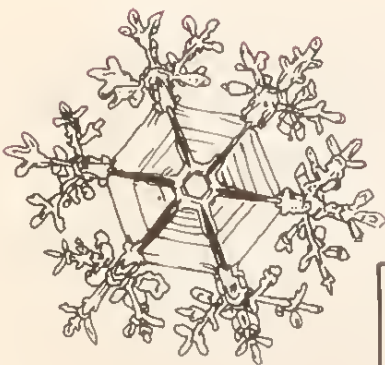
## Yellowstone streams below average

Streamflow forecasts are lower now than they were on January 1, due to low January precipitation. Presently, most streams are predicted to have flows 10 to 15 percent below average.

Conditions in the Yellowstone River headwaters are a little better than on downstream tributaries.



YELLOWSTONE RIVER DRAINAGE  
MONTANA  
MOUNTAIN SNOW WATER EQUIVALENT



WATER SUPPLY OUTLOOK		Expressed as "Poor, Fair, Average, Excellent" With Respect to Usual Supply	
STREAM or AREA	Flow Period		
	Spring Season	Late Season	
Yellowstone at			
Livingston .....	Avg	Fair	
Shields .....	Avg	Fair	
Boulder .....	Fair	Fair	
Sweetgrass - Big			
Timber .....	Avg	Fair	
Stillwater .....	Fair	Fair	
Rock Creek .....	Fair	Fair	
Clark's Fork .....	Fair	Fair	
Yellowstone above			
Bighorn .....	Avg	Fair	
Bighorn .....	Avg	Avg	
Little Bighorn .....	Fair	Fair	
Tongue .....	Fair	Fair	
Powder .....	Fair	Fair	
Lower Yellowstone ...	Avg	Fair	

## Snowfall light in Yellowstone

January was not a good snowfall month. Snowfall was very light for most of the month with a little moisture coming near its end. Snow water content increases were in the 1/2- to 1-inch range for most locations.

This low snowfall dropped the current snowpack to below average in all but the headwater drainages in Yellowstone National Park. There, the snowpack is near to a little below average.

The area from West Rosebud, Red Lodge and Rock Creek across to the Clark's Fork in Montana and Wyoming has well below average snow. Extremely cold temperatures were recorded across the entire drainage near the end of January.

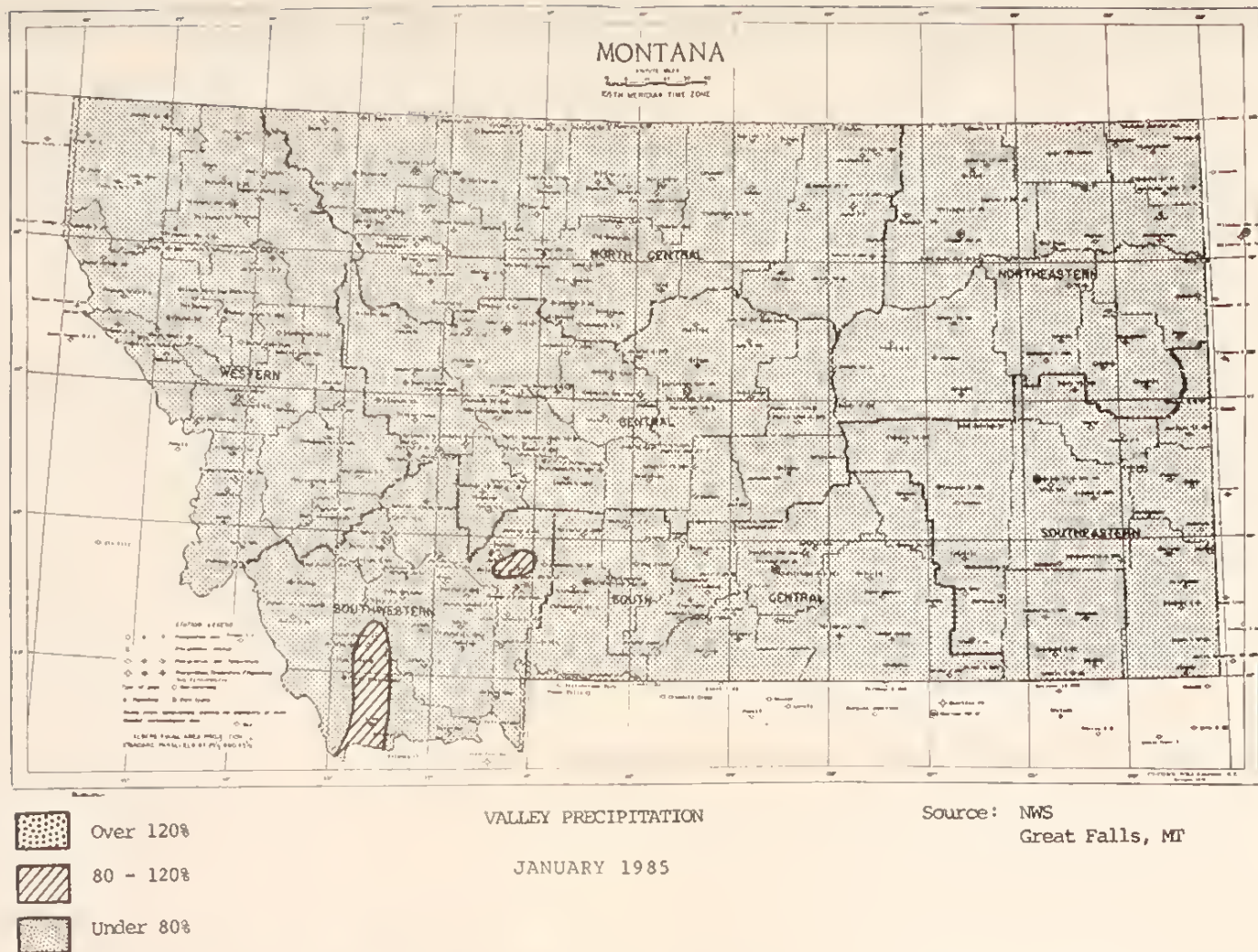
The weather patterns are presently unstable and only time will tell how this year's snow accumulation will stack up.

SUMMARY of SNOW MEASUREMENTS (COMPARISON WITH PREVIOUS YEARS)			
RIVER BASIN and/or SUB-WATERSHED	Number of Courses Averaged	THIS YEAR'S SNOW WATER AS PERCENT OF	
		Last Year	Average
Upper Yellowstone			
ab Livingston . .	12	108	80
Shields . . . . .	5	82	63
Boulder & Stillwater . . . .	4	99	73
Rock Creek & Clark's Fork . . .	9	91	70
Yellowstone (ab Bighorn River) . .	30	97	73
Bighorn/Wyoming .	29	81	71
Little Bighorn . .	3	88	74
Tongue . . . . .	10	94	83
Powder . . . . .	7	90	84
Yellowstone (Total) . . . . .	76	90	74



Snowpack in the headwaters of the Clark's Fork River in the Yellowstone River drainage is about 70 percent of average.





This winter's snow accumulation is below average in many mountain areas.

#### AGENCIES AND ORGANIZATIONS COOPERATING IN MONTANA SNOW SURVEYS

##### GOVERNMENT AGENCIES

###### Canada

Department of the Environment  
Atmospheric Environment Service  
Water Management Service  
British Columbia Ministry of Environment  
Inventory and Engineering Branch, Hydrology Section  
Alberta Environment  
Technical Services Division

###### Federal

Department of the Army - Corps of Engineers  
Department of Agriculture - Forest Service  
Department of Commerce - National Environmental Satellite Service  
Department of Interior - National Weather Service  
Department of Interior - Bureau of Indian Affairs  
Department of Interior - Fish and Wildlife Service  
Department of Interior - Geological Survey  
Department of Interior - National Park Service  
Department of Interior - Bureau of Reclamation  
Department of Energy - Bonneville Power Administration

##### STATE AGENCIES

Montana Conservation Districts  
Montana Department of Fish, Wildlife and Parks  
Montana Department of Natural Resources and Conservation  
Montana State University - Agricultural Experiment Station  
University of Montana - School of Forestry

##### PRIVATE ORGANIZATIONS

The Anaconda Company  
Big Sky of Montana  
Butte Water Company  
Flathead Valley Community College  
Montana Power Company  
Pondera County Canal & Reservoir Company

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

#### RESERVOIR STORAGE (Thousand Acre Feet) END OF MONTH January 31, 1985

Basin or Stream	RESERVOIR	Usable Capacity	Usable Storage		
			This Year	Last Year	Average
COLUMBIA					
Kootenai	Koocanusa	5,748.2	2,113.0	3,619.0	2,406.0
Flathead	Hungry Horse	3,451.0	2,308.0	2,611.0	2,353.0
	Flathead Lake	1,791.0	835.3	875.0	1,179.0
Clark Fork	Camas (4)	45.2	17.0	29.0	11.1
	Mission Valley (8)	100.3	34.7	55.9	36.6
	Georgetown Lake	31.0	26.6	27.5	26.9
	Lower Willow Creek	4.9	0.3	3.3	1.4
	Nevada Creek	12.6	4.3	6.9	4.4
Bitterroot	Noxon Rapids	334.6	323.7	318.9	312.2
	Painted Rocks	31.7	---	8.7	16.5
	Como	34.9	7.9	10.8	10.5
MISSOURI					
Beaverhead	Lima	84.0	25.9	51.4	34.4
	Clark Canyon	257.2	149.2	177.1	138.7
Ruby	Ruby	38.8	24.1	27.0	23.3
Madison	Hebgen Lake	377.5	310.2	262.1	232.6
	Ennis Lake	41.0	31.0	30.3	35.6
Gallatin	Middle Creek	8.0	3.8	3.9	3.3
Missouri	Canyon Ferry	2,043.0	1,459.0	1,723.0	1,613.0
	Hauser & Helena	61.9	63.2	63.0	60.4
	Helena Valley	9.2	4.6	4.3	5.6
	Lake Helena	10.4	10.9	10.9	10.0
	Holter Lake	81.9	76.3	81.0	69.4
Smith	Fort Peck Lake	18,910.0	15,900.0	16,050.0	15,050.0
	Smith River	10.6	8.8	9.2	6.5
	Newlan Creek	12.4	9.8	8.8	9.2
Musselshell	Sair	7.0	0.4	2.9	4.3
	Martinsdale	23.1	5.8	13.9	9.5
Sun	Deadman's Basin	72.2	---	56.5	43.2
	Gibson	99.1	47.1	50.6	40.8
	Willow Creek	32.2	12.6	24.3	20.4
Marias	Pishkun	32.0	18.5	19.6	16.5
	Lower Two Medicine	11.9	---	---	6.8
	Four Horns	19.2	---	---	12.5
	Swift	30.0	7.9	11.9	14.1
Milk	Lake Frances	111.9	23.8	47.2	70.0
	Elwell (Tiber)	1,347.0	675.8	692.3	545.6
	Beaver Creek	3.5	0.9	3.1	1.7
	Fresno	127.2	9.9	24.6	58.0
	Nelson	66.8	13.2	40.5	40.0
HUDSON 8AY					
St. Mary's	Lake Sherburne	64.3	35.2	37.3	19.5
YELLOWSTONE					
Stillwater	Mystic Lake	21.0	2.3	7.5	10.3
Clark's Fork	Cooney	27.4	18.8	16.5	14.0
Tongue	Tongue River	68.0	16.6	14.7	30.2
Big Horn	Big Horn Lake	1,356.0	907.4	879.6	609.2